

Attachment 2

Clean version of the claims with changes incorporated

1. (Amended) A process for removing elemental mercury from a gaseous stream comprising:
 - a) contacting a vaporized oxidizing agent with the gaseous stream for a time and at a temperature sufficient to form water soluble nitrogen and mercury-containing compounds, wherein the oxidizing agent comprises chloric acid and an alkaline metal chlorate; and
 - b) removing the water soluble compounds from the gas stream.

7. (Amended) A method for simultaneously removing elemental mercury and NO_x from a flue gas stream containing other constituents, the method comprising:
 - a) vaporizing an aqueous solution containing an oxidizing agent, wherein the oxidizing agent is present in the aqueous solution at a concentration of between 0.001 and 5 weight percent; and
 - b) contacting the vaporized oxidizing agent with the gaseous stream for a time and at a temperature sufficient to form water-soluble nitrogen- and mercury containing compounds; and
 - c) removing the water-soluble compounds.

14. (Amended) A method to simultaneously remove mercury and nitric oxide from flue gas, the method comprising:

a3

- a) vaporizing an oxidizing agent;
- b) contacting the vaporized oxidizing agent with the flue gas for a time and at a temperature sufficient to create water soluble mercury and nitrogen-containing compounds; and
- c) removing the water soluble compounds from the gas stream, wherein the water soluble compounds are removed using aqueous scrubbers employing alkaline moieties.

15. (Amended) A method as recited in claim 1,4 wherein the oxidizing agent contains halogen compounds selected from the group consisting of chloric acid, chlorine dioxide, sodium chlorate, sodium hypochlorite, bromic acid, iodic acid, and combinations thereof.

Hand

a4c

20. (New) A method to simultaneously remove mercury and nitric oxide from flue gas, the method comprising:

- a) contacting a vaporized oxidizing agent with the gaseous stream for a time and at a temperature sufficient to form water soluble nitrogen and mercury-containing compounds, wherein the oxidizing agent is ~~selecting~~ from the group consisting of an alkali metal hydroxide, and alkaline earth metal hydroxide, an alkali metal carbonate, an alkaline earth metal carbonate and mixtures thereof; and
- b) removing the water soluble compounds from the gas stream.

21. (New) A method as recited in amended claim 1, wherein the presence of SO_x improves removal of Hg.

22. (New) A method as recited in amended claim 1, wherein the oxidizing agent converts NO to water soluble NO₂.

23. (New) A method as recited in amended claim 7, wherein the oxidizing agent is selected from the group consisting of chloric acid, chlorine dioxide, and chloric acid and an alkali metal chlorate.

24. (New) A method as recited in amended claim 7, wherein the oxidizing agent is selected from the group consisting of chloric acid, chlorine dioxide, sodium chlorate, sodium chlorite, sodium hypochlorite, bromic acid, iodic acid, and combinations thereof.

25. (New) A method as recited in amended claim 14, wherein the oxidizing agent is chlorine dioxide.

26. (New) A method as recited in amended claim 14, wherein the oxidizing agent is chloric acid.

27. (New) A method as recited in amended claim 14, wherein vaporization of the oxidizing agent is accomplished by passing it through a heat exchanger, the heat exchanger being at a temperature between 400 and 500°F.

28. (New) A method as recited in amended claim 14, wherein the vaporized oxidizing agent contacts that gaseous stream in a counter current direction.

29. (New) A method as recited in amended claim 14, wherein the alkaline moieties are selected from the group consisting of NaOH, Mg(OH)₂, Ca(OH)₂, NaCO₃, K₂CO₃, MgCO₃, CaCO₃ and combinations thereof.

30. (New) A process for removing elemental mercury from a gaseous stream comprising:

- contacting a vaporized oxidizing agent with the gaseous stream for a time and a temperature sufficient to form water soluble nitrogen and mercury-

A Y B and
S-92,235

containing compounds, wherein the oxidizing agent is selected from the group consisting of: chloric acid, chloric acid and an alkaline metal chlorate, chlorine dioxide or combinations thereof; and

b) removing the water soluble compounds from the gas stream